



**Peter M. Rooney**  
*Secretary for  
Environmental  
Protection*

## **Air Resources Board**

**Barbara Riordan, Chairman**  
9528 Telstar Avenue · P.O. Box 8001 · El Monte, California 91731 · [www.arb.ca.gov](http://www.arb.ca.gov)



**Pete Wilson**  
*Governor*

### **MAIL OUT MSO #98-11**

**Date:** December 30, 1998

**To:** ALL PASSENGER CAR MANUFACTURERS  
ALL LIGHT-DUTY TRUCK MANUFACTURERS  
ALL MEDIUM-DUTY VEHICLE MANUFACTURERS  
ALL INTERESTED PARTIES

**Subject:** Amendments for year 2000 compliance (Y2K) to motor vehicle manufacturer quarterly quality audit reports.

The assembly-line quality audit (QA) reporting format currently used by manufacturers for electronic and hard copy quarterly submittals is defined in the Air Resources Board's (ARB) Manufacturers' Advisory Correspondence (MAC) #97-03. Four fields provide date information as part of the required format: the start up and buildout dates for an engine family in the "Engine Family Data Per Quarter File", and the build and test dates for each vehicle tested in the "Individual Data Per Quarter File". As defined in MAC #97-03, the fields are to be entered in date format using six digits to represent the year, month and day.

To ensure that manufacturers submit date information that is Y2K compliant, beginning with the 2000 model year the ARB will require that all date fields be expanded to include four digits to represent the year. The length of the field in the "Engine Family Data Per Quarter File" table is currently eight digits which will accommodate this change. The length of the field in the "Individual Data Per Quarter File" is currently six digits and will need to be lengthened to eight digits to allow four digits to be used to represent the year. These modifications to the Engine Family Per Quarter File and to the Individual Data Per Quarter File are shown in the attachment to this Mail Out.

In addition, as has been required in MAC #97-03, the data type to be used for this date information is "date" format rather than a "numeric" or "text" data

type. If a manufacturer is submitting their report using Microsoft Access, the first four numbers will represent the calendar year, the following two numbers will designate the month, and the last two numbers will identify the day. For manufacturers submitting their reports using Excel or other spread sheet software, as long as the date information fields use a "date" data type, the information will be interpreted correctly when entered into the ARB's database.

For the date information provided in the hardcopy format (the build and test dates of the individual vehicles), manufacturers have a choice to include the four digits for the year or to continue to represent the year with the two digits. Likewise, the code name for each manufacturer's files uses the first two places to identify the model year being reported. Manufacturers may choose to continue to use two digits to represent the model year to identify their files or they may expand the file names on their electronic submittals to four digits to represent the year.

Your cooperation in making these changes to expand the date fields in your electronic submittals to include four digits for the year and to ensure that these entries are made using the "date" data type is greatly appreciated. If you have further questions about these requested changes, please contact Satya Devesh, Air Resources Engineer, at (626)575-6704 for assistance.

Sincerely,

R. B. Summerfield, Chief  
Mobile Source Operations Division

Attachment:

ENGINE FAMILY DATA PER QUARTER FILE						
Sequence	Data Name	Type	Length	Range or Domain	Description	Reference *
1	QTR	C	2	example: for 98 model year vehicles  Q1 = Jan-Mar'98      Q5 = Jan-Mar'98 Q2 = Apr-Jun'98      Q6 = Apr-Jun'98 Q3 = Jul-Sep'98      Q7 = Jul-Sep'98 Q4 = Oct-Dec'98      Q8 = Oct-Dec'98	Engine family production quarter.	C.7
2	MFR	C	4	examples: GM, NISS, BENZ See Codes for Manufacturers (p.9)	Name of the manufacturer.	C.7
3	ENG_FAM	C	12	example: WXXMV3.02EK See EPA designation	12-digit name for engine family (same as EPA).	C.7.(a)
4	VEHCLASS	C	2	PC = Passenger Car T1 = LDT (0 - 3750 lbs.) T2 = LDT (3751 - 5750 lbs.) M1 = MDV (0 - 3750 lbs.) M2 = MDV (3751 - 5750 lbs.) M3 = MDV (5751 - 8500 lbs.)	Types of Light Duty Vehicle	C.7.(a)
5	CODETYPE	C	3	CA = California certified 49S = 49-state certified 50S = 50-state certified	Defines this engine family as certified to meet either CA, 49-state or 50-state standards	C.7.(3), (i)
6	STANDARD	C	5	TIER1 = current new standards TLEV = Transition low emission vehicle LEV = Low emission vehicle ULEV = Ultra low emission vehicle SULEV=Super low emission vehicle ZEV = Zero emission vehicle  965T1 = AB965 Tier1 standards	Standard level this engine family is certified to.	C.7.(a)
7	OPTS	C	1	1 = Option (i) load canister on-board 2 = Option (ii) load slave canister 3 = Option (iii) canister loading factor (CLF) 4 = Option (iv) CLF with slave canister D= certified to 100K optional diesel standards	Column to identify canister loading options for gasoline vehicles or if diesel family certified to 100K optional diesel standards.	C.7.(e)(3) C.2.(c)(i). (ii). (iii). (iv)
8	DRIVE	C	2	2F = 2 wheel drive, front 2R = 2 wheel drive, rear 4F = 4 wheel drive, Full-time 4P = 4 wheel drive, Part-time	Drive type	C.7.(g)
9	STARTUP	D	8	example: July 20, 2000 = 20000720 yyyymmdd	Start date (in date format) of production for this engine family. Report every quarter after start up.	C.7.(a)
10	BUILDOUT	D	8	example: December 12, 2000 = 20001212 yyyymmdd	Engine family build-out date (in date format); date of the end of the manufacturer's model production year. Leave blank until actual build-out.	C.7.(a)
11	DISTR_49	N	5	0 to 50000	Number of vehicles produced and delivered for sale outside CA in the reported quarter.	MAC 93-02 MAC 87-10
12	CA_DIST R	N	5	0 to 50000	Number of vehicles produced and delivered for sale in CA, in the reported quarter.	C.7.(a)
13	PRODSIZE	N	5	0 to 99999	Total number of vehicles produced in the engine family, in the reported quarter.	MAC 87-10 C.7(a)

ENGINE FAMILY DATA PER QUARTER FILE						
Sequence	Data Name	Type	Length	Range or Domain	Description	Reference *
17	QAFUEL	C		IND = Indolene PH2 = Phase II gasoline M85 = 85% Methanol CNG = Compressed Natural Gas LPG = Liquefied Petroleum Gas E85 = 85% Ethanol Diesel: N13 = 13 CCR 2282	Fuel type used during QA testing if different from TESTFUEL (sequence #16)	C.5.(e)
18	NMHCMEAN	N	1.4	0.0000 to 9.9999	NMHC/OMNMHCE (Methanol/Ethanol) mean (in g/mi) of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)
19	NMHC_SD	N	1.4	0.0000 to 9.9999	NMHC/OMNMHCE (Methanol/Ethanol) standard deviation of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)
20	NMOGMEAN	N	1.4	0.0000 to 9.9999	NMOG mean (in g/mi) of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)
21	NMOG_SD	N	1.4	0.0000 to 9.9999	NMOG standard deviation of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)
22	CO_MEAN	N	2.2	0.00 to 99.99	CO mean (in g/mi) of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)
23	CO_SD	N	2.2	0.00 to 99.99	CO standard deviation of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)
24	NOXMEAN	N	1.3	0.000 to 9.999	NOX mean (in g/mi) of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)
25	NOX_SD	N	1.3	0.000 to 9.999	NOX standard deviation of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)
26	PM_MEAN	N	1.3	0.000 to 9.999	PM mean (in g/mi) of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)
27	PM_SD	N	1.3	0.000 to 9.999	PM standard deviation of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)
28	HCHOMEAN	N	1.4	0.0000 to 9.9999	HCHO mean (in g/mi) of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)
29	HCHO_SD	N	1.4	0.0000 to 9.9999	HCHO standard deviation of this engine family for the stated reporting period (Qtr) (no DFs applied)	C.7(e)(2)

ENGINE FAMILY DATA PER QUARTER FILE						
31	CO2_SD	N	3.1	0.0 to 999.9	CO2 standard deviation of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
32	NMHCMEA N5	N	1.4	0.0000 to 9.9999	50K NMHC/OMNMHCE (Methanol/Ethanol) mean (in g/mi) of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
Sequence	Data Name	Type	Length	Range or Domain	Description	Reference *
33	NMHC_SD 5	N	1.4	0.0000 to 9.9999	50K NMHC/OMNMHCE (Methanol/Ethanol) standard deviation of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
34	NMOGMEA N5	N	1.4	0.0000 to 9.9999	50K NMOG mean (in g/mi) of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
35	NMOG_SD 5	N	1.4	0.0000 to 9.9999	50K NMOG standard deviation of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
36	CO_MEAN 5	N	2.2	0.00 to 99.99	50K CO mean (in g/mi) of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
37	CO_SD5	N	2.2	0.00 to 99.99	50K CO standard deviation of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
38	NOXMEAN 5	N	1.3	0.000 to 9.999	50K NOX mean (in g/mi) of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
39	NOX_SD5	N	1.3	0.000 to 9.999	50K NOX standard deviation of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
40	PM_MEAN 5	N	1.3	0.000 to 9.999	50K PM mean (in g/mi) of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
41	PM_SD5	N	1.3	0.000 to 9.999	50K PM standard deviation of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
42	HCHOMEA N5	N	1.4	0.0000 to 9.9999	50K HCHO mean (in g/mi) of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
43	HCHO_SD 5	N	1.4	0.0000 to 9.9999	50K HCHO standard deviation of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
44	NMHCMEA N1	N	1.4	0.0000 to 9.9999	100K NMHC/OMNMHCE (Methanol/Ethanol) mean (in g/mi) of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
47	NMOG_SD 1	N	1.4	0.0000 to 9.9999	100K NMOG standard deviation of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
48	CO_MEAN 1	N	2.2	0.00 to 99.99	100K CO mean (in g/mi) of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
49	CO_SD1	N	2.2	0.00 to 99.99	100K CO standard deviation of this engine family for the	C.7(e)(2)

ENGINE FAMILY DATA PER QUARTER FILE						
					stated reporting period (Qtr)	
50	NOXMEAN 1	N	1.3	0.000 to 9.999	100K NOX mean (in g/mi) of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
Sequence	Data Name	Type	Length	Range or Domain	Description	Reference *
51	NOX_SD1	N	1.3	0.000 to 9.999	100K NOX standard deviation of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
52	PM_MEAN 1	N	1.3	0.000 to 9.999	100K PM mean (in g/mi) of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
53	PM_SD1	N	1.3	0.000 to 9.999	100K PM standard deviation of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
54	HCHOMEA N1	N	1.4	0.0000 to 9.9999	100K HCHO mean (in g/mi) of this engine family for the stated reporting period (Qtr)	C.7(e)(2)
55	HCHO_SD 1	N	1.4	0.0000 to 9.9999	100K HCHO standard deviation of this engine family for the stated reporting period (Qtr)	C.7(e)(2)

INDIVIDUAL DATA PER QUARTER FILE						
Sequence	Data Name	Type	Length	Range or Domain	Description	Reference *
1	QTR	C	2	example: for 98 model year vehicles  Q1 = Jan-Mar'98      Q5 = Jan-Mar'98 Q2 = Apr-Jun'98      Q6 = Apr-Jun'98 Q3 = Jul-Sep'98      Q7 = Jul-Sep'98 Q4 = Oct-Dec'98      Q8 = Oct-Dec'98	Engine family production quarter.	
2	MFR	C	4	examples: GM, NISS, BENZ See Codes for Manufacturers (p. 10)	Name of the manufacturer.	
3	ENG_FAM	C	12	example: FFM1.9V2GDC5 See EPA designation	12-digit name for engine family (same as EPA).	C.7.(b)
4	VEH_CLASSES	C	2	PC = Passenger Car T1 = LDT (0 - 3750 lbs.) T2 = LDT (3751 - 5750 lbs.) M1 = MDV (0 - 3750 lbs.) M2 = MDV (3751 - 5750 lbs.) M3 = MDV (5751 - 8500 lbs.) M4 = MDV (8501 - 10000 lbs.) M5 = MDV (10001 - 14000 lbs.)	Types of Light Duty Vehicle	C.7.(a), (e)(3)
5	CODETYPE	C	3	CA = California certified 49S = 49-state certified 50S = 50-state certified	Defines this engine family as certified to meet either CA, 49-state or 50-state standards	C.7.(e)(3), (j)
6	STANDARD	C	5	TIER0 = existing standards TIER1 = current new standards TLEV = Transition low emission vehicle LEV = Low emission vehicle ULEV = Ultra low emission vehicle ZEV = Zero emission vehicle  965T1 = AB965 Tier1 standards	Standard level this eng_fam is certified to.	C.7.(a), (e)(3)
7	OPTIONS	C	1	1 = Option (i) load canister on-board 2 = Option (ii) load slave canister 3 = Option (iii) canister loading factor (CLF) 4 = Option (iv) CLF with slave canister D= certified to 100K optional diesel standards	Column for options and subgroupings within an engine family.	C.7.(e)(3)
8	DRIVE	C	2	2F = 2 wheel drive, front 2R = 2 wheel drive, rear 4F = 4 wheel drive, mandatory 4P = 4 wheel drive, optional	Drive type	C.7.(g)
9	DISP	N	3	0.0 TO 9.9	Engine displacement in cubic inches	C.7.(b)
10	ENG_CODE	C	8	Mfr designated	Mfr's engine code.	C.7.(b)
11	TRAN	C	2	A3 = Automatic 3 speed A4 = Automatic 4 speed A5 = Automatic 5 speed L3 = Lockup automatic 3 speed L4 = Lockup automatic 4 speed  M5 = Manual 5 speed M6 = Manual 6 speed	Transmission type	C.7.(b)

INDIVIDUAL DATA PER QUARTER FILE						
Sequence	Data Name	Type	Length	Range or Domain	Description	Reference *
14	DPA_STNG	N	2.2	0.00 TO 99.99	Dynamometer power absorption setting in horsepower	
15	MODEL	C	14	Mfr designated	Vehicle model	
16	LVW	N	5	0 to 99999	Loaded Vehicle Weight	
17	TESTFUEL	C		IND = Indolene = Phase II gasoline 85% Methanol Compressed Natural Gas Liquefied Petroleum Gas Ethanol  Diesel: N13 = 13 CCR 2282  PH2 M85 = CNG = LPG = E85 = 85%		
18	ODOMETER	N	4	0 to 9999 mi.	Odometer reading at the time of testing in miles.	C.2.(b)
19	MFR_PLANT	C	10	Text	Location where the vehicle was assembled / built.	
20	BLD_DATE	D	6	example: July 20, 2000 = 20000720 yyyymmdd	Date the vehicle was built (in date format).	
21	TEST_LOCATION	C	10	Text	Location where the vehicle was QA tested.	C.7.(b)
22	TESTDATE	D	6	example: December 12, 2000 = 20001212 yyyymmdd	Date the vehicle was QA tested (in date format).	C.7.(b)
23	VIN	C	17	Mfr designated	Vehicle Identification Number; a unique ID # for each vehicle produced.	C.7.(b)
24	NMHC	N	1.4	0.0000 to 9.9999	NMHC emissions (in g/mi) without deterioration factor	C.7.(c)
25	NMOG	N	1.4	0.0000 to 9.9999	NMOG emissions (in g/mi) without deterioration factor	C.7.(c)
26	CO	N	2.2	0.00 to 99.99	CO emissions (in g/mi) without deterioration factor	C.7.(c)
27	NOX	N	1.3	0.000 to 9.999	NOx emissions (in g/mi) without deterioration factor	C.7.(c)
28	PM	N	1.3	0.000 to 9.999	Particulate Matter emissions (in g/mi) without deterioration factor for diesel engines	C.7.(c)
29	HCHO	N	1.4	0.0000 to 9.9999	HCHO emissions (in g/mi) without deterioration factor	C.7.(c)
30	CO2	N	3.1	000.0 to 999.9	CO2 emissions (in g/mi) without deterioration factor	C.7.(c)
31	OBD_READY	C	1	Y = Yes N = No	Check for OBD system readiness	
32	OBD_IND	C	1	1 = OBD light indicator is on 0 = OBD light indicator is off.	Check OBD light indicator	



33	OBD COD E1	C	5	(refer to SAE pub. J2012)	1st OBD fault code from the OBD system.	
34	OBD COD E2	C	5	(refer to SAE pub. J2012)	2nd OBD fault code from the OBD system.	
35	OBDC ODE3	C	5	(refer to SAE pub. J2012)	3rd OBD fault code from the OBD system.	
36	OBDC ODE4	C	5	(refer to SAE pub. J2012)	4th OBD fault code from the OBD system.	
INDIVIDUAL DATA PER QUARTER FILE						
Sequence	Data Name	Type	Length	Range or Domain	Description	Reference *
37	OBDC ODE5	C	5	(refer to SAE pub. J2012)	5th OBD fault code from the OBD system.	
38	TST_ STAT	C	2	<u>if tested:</u> (blank) = valid first test IN = Invalid test AB = Aborted test RT = Valid retest (for a vehicle failing the initial test) <u>if not tested:</u> NT = Not Testable NR = Not reasonably operative NS = Not safe to test DT = Would be damaged by testing	Test status  Report the reason(s) for aborting, invalidating, retesting or not testing in the NOTES field of this record. Repairs should be reported in the REPAIRS field of the record containing the emissions resulting from those repairs.	C.2.(d),(g), C.7.(d),(f)
39	REP AIRS	C	40	Mfr. designated	Any repairs/adjustments/corrective measures performed on the vehicle prior to testing of the vehicle. These repairs should correspond to the emissions results of this record. List specific components replaced or adjusted.	C.2.(e), C.7.(d)
40	NOT ES	C	50	Text	Any comments: Reason(s) for Aborting, Retesting, Invalidating a test. Reason(s) a vehicle was not tested. etc.	C.2.(d), (e)(g), C.7.(d),(f)
41	NMH C_50 K	N	1.4	0.0000 to 9.9999	NMHC emissions (in g/mi) with 50K deterioration factor applied	C.7.(c)
42	NMO G_50 K	N	1.4	0.0000 to 9.9999	NMOG emissions (in g/mi) with 50K deterioration factor applied	C.7.(c)
43	CO_ 50K	N	2.2	0.00 to 99.99	CO emissions (in g/mi) with 50K deterioration factor applied	C.7.(c)
44	NOX _50K	N	1.3	0.000 to 9.999	NOx emissions (in g/mi) with 50K deterioration factor applied	C.7.(c)
45	PM_ 50K	N	1.3	0.000 to 9.999	Particulate Matter emissions (in g/mi) with 50K deterioration factor applied for diesel engines	C.7.(c)
46	HCH O_50 K	N	1.4	0.0000 to 9.9999	HCHO emissions (in g/mi) with 50K deterioration factor applied	C.7.(c)
47	NMH C100 K	N	1.4	0.0000 to 9.9999	NMHC emissions (in g/mi) with 100K deterioration factor applied	C.7.(c)
48	NMO G100	N	1.4	0.0000 to 9.9999	NMOG emissions (in g/mi) with 100K deterioration factor applied	C.7.(c)

	K				deterioration factor applied	
49	CO_ 100K	N	2.2	00.00 to 99.99	CO emissions (in g/mi) with 100K deterioration factor applied	C.7.(c)
50	NOX _100 K	N	1.3	0.000 to 9.999	NOx emissions (in g/mi) with 100K deterioration factor applied	C.7.(c)
51	PM_ 100K	N	1.3	0.000 to 9.999	Particulate Matter emissions (in g/mi) with 100K deterioration factor applied for diesel engines	C.7.(c)
52	HCH O100 K	N	1.4	0.0000 to 9.9999	HCHO emissions (in g/mi) with 100K deterioration factor applied	C.7.(c)